



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/088,484	03/20/2002	Osamu Sakai	43888-132	7151

20277 7590 10/27/2003
MCDERMOTT WILL & EMERY
600 13TH STREET, N.W.
WASHINGTON, DC 20005-3096

EXAMINER

YUAN, DAH WEI D

ART UNIT	PAPER NUMBER
----------	--------------

1745

DATE MAILED: 10/27/2003

6

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/088,484

Applicant(s)

SAKAI ET AL.

Examiner

Dah-Wei D. Yuan

Art Unit

1745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3,5.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

POLYMER ELECTROLYTE FUEL CELL AND METHOD
FOR PRODUCING THE SAME

Examiner: Yuan

S.N. 10/088,484

Art Unit: 1745

October 20, 2003

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 5 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

3. Claim 5 recites the limitation "said layer" in Line 3. It is not clear what the limitation is referred to. It could refer to the layer comprising catalyst particles or the layer that is not in contact with the membrane. Appropriate corrections are required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-3,8-11 are rejected under 35 U.S.C. 102(e) as being anticipated by Tomoyuki et al. (JP 09-245802).

With respect to claim 1, Tomoyuki et al. teach a polymer electrolyte fuel cell comprising an ion conductive polymer electrolyte membrane (1), an anode (4A), a cathode (4C), an anode side electroconductive separator having a gas channel (5A), and a cathode side electroconductive separator (5C). Both the anode and cathode comprise a gas diffusion layer (13) and a catalyst layer (12), which is in contact with the membrane (11). See Figures 1 and 2. Tomoyuki et al. teach both the gas permeability and proton conductivity of the electrode vary in the thickness direction of the electrode by changing the ion exchange resin concentration, catalyst concentration, and the specific surface area of the catalyst support. See Abstract, Paragraphs 3,5,6,10.

With respect to claims 2,3, Tomoyuki et al. further teach the content of Nafion (a hydrogen ion exchange polymer electrolyte) is higher at the catalyst layer/membrane interface than that at the gas diffusion layer/catalyst layer interface. See Paragraphs 10,12,14,15.

It is noted that claims 8-11 are product-by-process claims. "Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In re Thorpe, 777 F. 2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 4,6,7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tomoyuki et al. (JP 09-245802) as applied to claims 1-3,8-11 and further in view of Tomoyuki et al. (JP 09-245801).

Tomoyuki et al. teach a polymer electrolyte fuel cell as described above in Paragraph 5. However, Tomoyuki et al. do not teach the catalyst layer comprising a layer, which is not in contact with the hydrogen ion conductive polymer electrolyte membrane. Tomoyuki et al. (JP 09-245801) teach a polymer electrolyte fuel cell comprising an anode and a cathode. Both electrodes (5) comprise a gas diffusion layer (1), a catalyst layer (2) and an interlayer (4), which is not in contact with the membrane. See Figure 1. The interlayer is used to separate the catalyst layer and the gas diffusion layer so that catalyst cannot advance into the gas diffusion layer. See Paragraph 7. Therefore, it would have been obvious to one of ordinary skill in the art to use the electrode having an interlayer on the polymer electrolyte fuel cell of Tomoyuki (JP 09-245802), because Tomoyuki (JP 09-245801) teaches the use of an interlayer can prevent the interaction between the catalyst layer and the gas diffusion layer in the fuel cell system.

Art Unit: 1745

With respect to claims 6,7, Tomoyuki (JP 09-2458010) teach the use of two or more sheets of different porosity to prepare the gas diffusion layer. As a result, the porosity is low toward the catalyst layer. See Claim 4, Paragraph 11.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dah-Wei D. Yuan whose telephone number is (703) 308-0766.

The examiner can normally be reached on Monday-Friday (8:00-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan, can be reached on (703) 308-2383. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Dah-Wei D. Yuan
October 20, 2003

